DOCUMENT RESUME

ED 030 645 TE 001 415

By-Groff, Patrick

Research on Spelling and Phonetics.

Pub Date 68
Note-5p.
Journal Cit-Education: v89 n2 p132-35 Nov-Dec 1968
EDRS Price MF-$0.25 HC-$0.35
Descriptors-Applied Linguistics, *Educational Research, *English Instruction, Phonetic Analysis, *Phonetics, Pronunciation, Research Reviews (Publications), *Spelling, *Spelling Instruction

Recent research supports the theory that "phonetic knowledges and skills play an important part in spelling ability." Six research studies indicated a high and moderately high correlation between spelling skills and phonetic knowledge. Studies to determine whether or not the special teaching of phonetics would improve students' spelling achievements have shown less agreement, but nine out of 15 studies found improvement in spelling achievement. The researchers who reported their procedural techniques emphasized simplified spelling, derivatives, or activities centered 'round teaching speech sounds in parts of words and discrimination of phonetic elements. To test whether a modified use of such techniques would improve spelling, students were given a phonetics lesson instead of the regular Wednesday spelling test for one semester. Results indicated that middle-grade pupils in this experimental program made somewhat greater spelling gains than did matched groups in the customary program. (LH)

ED030645

Education

VOLUME 89, NUMBER 2 NOVEMBER-DECEMBER, 1968

CONTENTS

Feature Section

The Changing Language Arts Program

Guest Editor, Hazel C. Hart
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Influence of Speech on Language Development .....*William Gombar* 99
Teaching Listening in the Elementary School *Paul M. Hollingsworth* 103
New Dimensions in Paragraph Instruction .....*Edna L. Furness* 105
Teaching Reading in the Elementary School .....*A. Byron Callaway* and *Oscar T. Jarvis* 112
Informal Reading Skills Inventories .....*Leo M. Schell* 117
Teaching Readiness for Reading to the Immature.....*Shirley Levine* 121
Enriching Reading for Pupils of Varied Abilities .....*Nicholas P. Criscuolo* 124
Students' Reasons for Becoming Better Readers .....*Ruth Strang* 127
Research on Spelling and Phonetics .....*Patrick Groff* 132
Teaching Literature in the Elementary School .....*Naomi Gilpatrick* 136
Teaching Literature in the Secondary School ....*Roderick M. Kippen* 142
Our Students "Share the Wealth" *Helen O'Leary* and *Masha Rudman* 144

Special Articles

Why Many Leave the Profession of Teaching ....*Samuel D. Aven* 147
Our Public Schools Still Far from Being Free .....*A. R. Mead* 149
State Control of Private Education .....*James L. Schott* 153
The Decision-Making Approach to the Study of American Government .....*Robert E. Cleary* 157
Controlled Group Guidance .....*Benjamin J. Novak* 162
Antecedent Relationships to High School Dropout or Graduation .....*Dee Norman Lloyd* 166
A Larger Concept of Counseling *Louis J. Cantoni* and *Lucile Cantoni* 169
Child Training in the U. S. S. R. .....*Gertrude Hildreth* 173

Monthly Departments

Leader in Education: Elizabeth Duncan Koontz 182
What Schools Are Doing—Improving Spelling Instruction .....*Guy Wagner* 183
Viwepoints—What's the Purpose? .....*Earl H. Hanson* 190
Book Reviews .....*William P. Sears, Jr.* 191

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Research on Spelling and Phonetics

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Recent research indicates that children who spell well in school generally manifest great sensitivity in auditory discrimination.

IN 1941 Dr. George Spache reviewed the research literature on spelling and reported what he believed to be the factors probably causal in spelling disability (1). He believed at this time that "there is sufficient evidence to conclude auditory discrimination plays a causal part in spelling disability." About phonetics skills and spelling he concluded, "There is ample evidence to conclude phonetic knowledges and skills play an important part in spelling ability." In the generation since that time, a time in which we have experienced an upsurge in the call for the teaching of phonetics in reading and spelling, does research still find these conclusions to be valid ones?

First, what does the term, *phonetics,* to be used throughout this discussion, mean? By phonetic knowledge and skills is meant here the ability to (a) discriminate aurally the sounds (or phonemes) of American English, (b) to pronounce these sounds, (c) to discriminate visually which letters (or graphemes) are usually used to represent them in writing, and (d) to reproduce these sounds in writing after listening to them.

There remains a controversy over whether these sounds should be studied in isolation or only as they appear in words or other meaningful linguistic units (or morphemes). This latter matter is beyond the scope of this discussion, however. The term, *phonics,* which has come to mean the study and application of elementary phonetics, will be avoided here for the sake of simplicity.

Results of Recent Research

In one sense the answer to the question asked in the opening paragraph must be a categorical "Yes." At least two research studies (2, 3) since 1941 have found that children who achieve in approximately the top 25 percent in spelling have significantly greater abilities with phonetics than do those who achieve in the bottom 25 percent. There also have been found moderately high correlations between spelling skills and phonetic knowledge (4, 5, 6, 7). From this there would seem little doubt that Spache's conclusion—that the knowledge of phonetics is related to spelling—is as true today as it was in 1941.

If it is true that there seems a positive relationship between spelling achievement and phonetic ability, would not the special teaching of phonetics bring on improved achievement in spelling? Several studies since 1941 tested this as-

sumption. In these investigations "experimental" groups of pupils were given special training in phonetics while "control" groups continued with customary spelling instruction, usually that suggested by a spelling textbook.

Here we cannot be so quick to make a general conclusion, especially if we only compare the numbers of researches that either support or deny the assumption. I have found nine studies (8, 9, 10, 11, 12, 13, 14, 15, 16) that since 1941 have shown that in classes of pupils in which the use of phonetics was stressed, or where pupils were given unusual amounts of phonetic training, these pupils had significantly greater spelling achievement than did matched groups of pupils who did not have this special training. On the other hand, I found since 1941 six pieces of research (17, 18, 19, 20, 21, 22) that concluded there were no significant differences between the spelling achievement of such groups; that is, that neither of the programs was significantly superior to the other.

There appears here to be somewhat of a stand-off in the numbers of research findings on the question of whether or not training in phonetics will bring on greater spelling achievement. However, a closer examination of the nature of the two groups of research on this question indicated to me that the research supporting phonetics training was of greater quality. For example, only three of the six studies that did not support the teaching of phonetics involved large enough groups of subjects to make their conclusions generally applicable. It is an axiom of research of this nature that the group of subjects in a study be large enough that sampling errors will not invalidate the findings. It is also important to remember that all of these latter six studies found that use of a special phonetics program resulted in equal gains with the customary textbook program. In no case was the exclusive use of the spelling textbook found to bring on better results. We must say, therefore, that the weight of evidence favors the use of special phonetics programs.

Phonetic Activities Used

If this is so, it is useful to know what phonetics were involved in the nine studies that found superior gains with phonetics training. Not all the studies described what they did with phonetics in detail. Those that did indicated they used simplified spelling (13), studied derivatives—that is, the parts added to root words (15), or used phonetic activities centered around teaching the discrimination of phonetic elements, and the speech sounds in beginning, medial, and final parts of words.

These phonetics activities are exemplified by the study made by Russell, Murphy, and Durrell (14). They had pupils listen to words and write the final and ending single consonants, consonant blends, and vowels. They taught pupils to combine words to make compound words, and to note the number of syllables in words. Syllabic division was learned. After illustrating the rules for adding "ed" and "ing," the pupils practiced putting these on words. Other suffixes and prefixes were then added to words. The special task of making plurals of words ending in *x*, *sh*, *s*, *nch*, *ss*, and *tch* was learned. Oral work was stressed throughout the entire program.

To see whether a modified use of these materials for one semester would bring greater than ordinary results, I conducted a study in which these activi-

ties replaced the Wednesday spelling test usually given in the textbook program. No other change from textbook procedures was used. The findings of this study (23) indicated that middle-grade pupils in this experimental program made somewhat greater spelling gains than did matched groups in the customary program. This seemed to me further evidence of the positive relationship of phonetics and spelling that is seen throughout this review.

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